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sustainable solutions for ending hunger and poverty

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New Risks and Opportunities for Food Security

Scenario Analyses for 2015 and 2050

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Over the past several decades, the world has made remarkable progress in reducing undernourishment. According to the Food and Agriculture Organization of the United Nations (FAO), the number of undernourished people in developing countries fell from 920 million in 1980 to 798 million in 2001, while the proportion of people living under such conditions dropped from 28 to 17 percent.

However, progress in hunger reduction slowed considerably during the late 1990s: between 1995 and 2001, the number of undernourished people in the developing world increased by more than 18 million. These are ominous signs for the future, especially amidst concerns that water scarcity, soil depletion, the lack of technology adoption and dissemination, political and civil conflict, and the continued threat of disease epidemics such as HIV/AIDS pose a grave threat to the food security of growing populations in developing countries.

Given the number of undernourished people in the developing world and the increasingly complex risks to food security, policymakers are faced with an enormous agenda. Freeing people from hunger will require more and better-targeted investments, innovations, and policy actions, driven by a keen understanding of the risks and forces that shape the factors affecting people's access to food and nutritional well being.

The International Food Policy Research Institute's (IFPRI's) International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT) provides insight into the management of these risks through appropriate policy actions. By projecting future global food scenarios to 2050, IMPACT explores the potential implications of policy action and inaction in several main risk areas as well as the effects on child malnutrition in the developing world, commodity prices, demand, cereal yields, production, and net trade. The model results for three plausible future scenarios appear below.

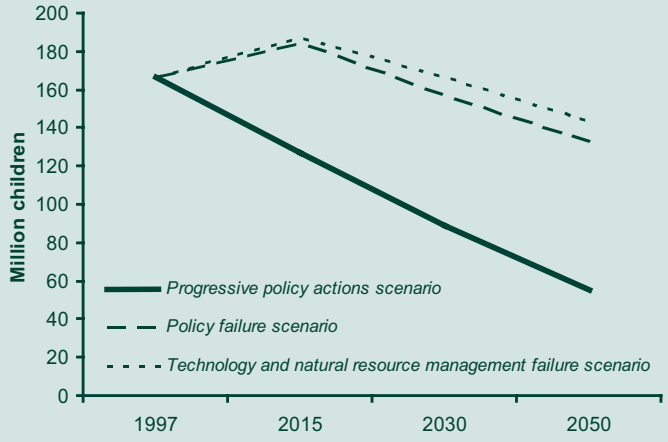
Progressive Policy Actions Scenario

Through increasing investment in rural development, health, education, and agricultural research and development, developing-country governments and the international community can dramatically reduce the number of food-insecure people, leading to a worldwide decline in hunger. Under these conditions, the number of malnourished children in developing countries decreases by more than 100 million over the next 50 years, and Latin America and China virtually eliminate child malnutrition (Figure 1).

Bolstered by the development and dissemination of improved technologies and better infrastructure, crop production and yields increase in developing countries. Notably, the bulk of the growth in production is driven by yield increases rather than by expanding land area. Spurred by growth in the agricultural sector, average incomes in developing countries increase. Rising incomes bolster demand for high-value agricultural products, such as meat, dairy, and fruits and vegetables; global livestock production more than doubles, for example. Average per capita calorie supplies for developing countries exceed 3,400 per day, well above minimum requirements.

Do we have reason to hope that the international community and governments are moving toward such progressive policy action to combat hunger and malnutrition in the developing world? There are positive signs. Developing countries and the broader international community have collectively embraced the goals of the World Food Summit and the United Nations Millennium Development Goals, both of which call for reductions in hunger and increased political will and monetary support. Bilateral and multilateral donors are placing renewed emphasis on agriculture and rural development. The World Bank's recent rural strategy, released in 2002, is a crucial example. Individually, developing-country governments are showing a new spirit of action to address food insecurity and undernutrition. Most of the governments of the

Figure 1 Projected child undernourishment in developing countries, all scenarios



34 countries in which the highest number and percentage of the world's food-insecure people live have recently declared policy goals regarding food security. In the last five years, at least 22 of these countries have redesigned existing policies or adopted new agricultural and nutrition policies to enhance food security.

Even the progressive policy scenario does not result in food and nutrition security for all in the foreseeable future. Complementary policy actions on a larger scale for social security and improved human resources—such as early childhood nutrition programs, school feeding, and social safety nets—are needed on a sustained basis to achieve food security for all. Finally, the elimination of food insecurity will not happen until women achieve equal rights and participate fully in public life.

Policy Failure Scenario

In this scenario, current political-economic forces cause trade and political conflicts to persist, global agricultural trade negotiations to stall, and trade distortions to increase worldwide. The level of developing countries' net cereal trade remains negative because of unfavorable terms of trade and low income growth. Slow economic growth and trade restrictions lead to stagnation in average per capita calorie availability, which remains only slightly above minimum requirements until after 2030, when availability increases.

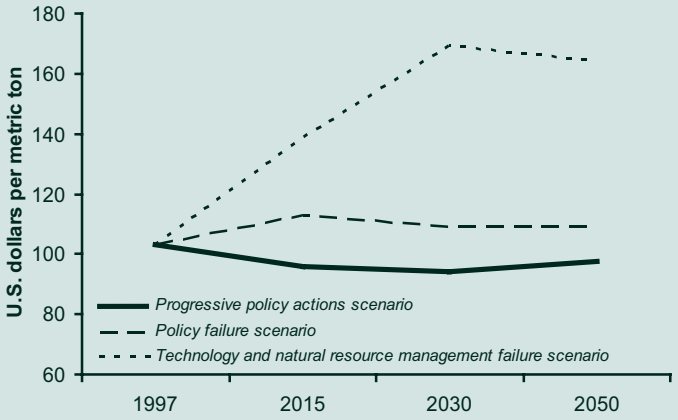
In addition, crucial investments in agriculture, rural development, and poverty reduction are foregone or displaced. Because of limited investment in agricultural research and technology, crop area expands considerably as a result of relatively rapid population growth and slim yield improvements in developing countries. Maize prices remain flat, per capita cereal demand declines, beef prices fall, and meat demand remains relatively flat. As a result of the policies pursued, the number of malnourished children in developing countries rises between 1997 and 2015, after which there are only modest declines. Furthermore, the already desperate situation of people affected by conflict and HIV/AIDS worsens severely.

Technology and Natural Resource Management Failure Scenario

This scenario shows what happens when water mismanagement, declining irrigation efficiency, lack of adaptation to climate change, and pest problems in agriculture abound. Yield growth falls precipitously, forcing farmers to move into marginal producing areas, causing a more rapid expansion of cereal area into less productive land that does not compensate for the yield shortfalls (thus causing environmental degradation). As a result, maize prices rise substantially through 2030 and fall off only gradually (Figure 2). Beef and other meat prices, which are affected by the price of feed, follow a similar pattern.

Developing-country per capita calorie availability is essentially unchanged over 1997–2050 and remains at a barely adequate average level. Given unequal access to the food that is available, millions of people actually consume less than the minimum requirements. The incidence of child undernourishment remains very high in all developing-country regions. Overall, failure to engage in appropriate management of technology and natural resources results in the worst impact on food security and child malnourishment in the developing world.

Figure 2 Projected world maize price, all scenarios



Conclusion

The progressive policy actions scenario outlines several of the most important steps for assuring a food-secure world. National governments and the international community must adopt a new focus on agricultural growth and rural development, along with increasing their investments in education, health, and other social services. Policies to encourage synergistic growth in the nonfarm sectors are also needed to spur broad-based economic growth. A firm commitment to reducing hunger and improving the welfare of the world's undernourished people must underpin these strategies and research agendas. But investment in social services and growth-oriented policy actions alone will not be sufficient to reach the Millennium Development Goal of cutting hunger by half by 2015 or to end hunger soon thereafter. Only if policy actions include sustained investment in social safety nets will food and nutrition security be achieved in the foreseeable future.

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This Policy Brief is based on 2020 Discussion Paper 39 of the same title.

"A 2020 Vision for Food, Agriculture, and the Environment" is an initiative of the International Food Policy Research Institute (IFPRI) to develop a shared vision and a consensus for action on how to meet future world food needs while reducing poverty and protecting the environment. Through the 2020 Vision Initiative, IFPRI is bringing together divergent schools of thought on these issues, generating research, and identifying recommendations. The 2020 Policy Briefs present information on various aspects of the issues.